

U.S. Fusion Energy Sciences Program

Fusion Program Leaders Conference Call



www.ofes.fusion.doe.gov

February 7, 2005

Excellent Science in Support of Attractive Energy

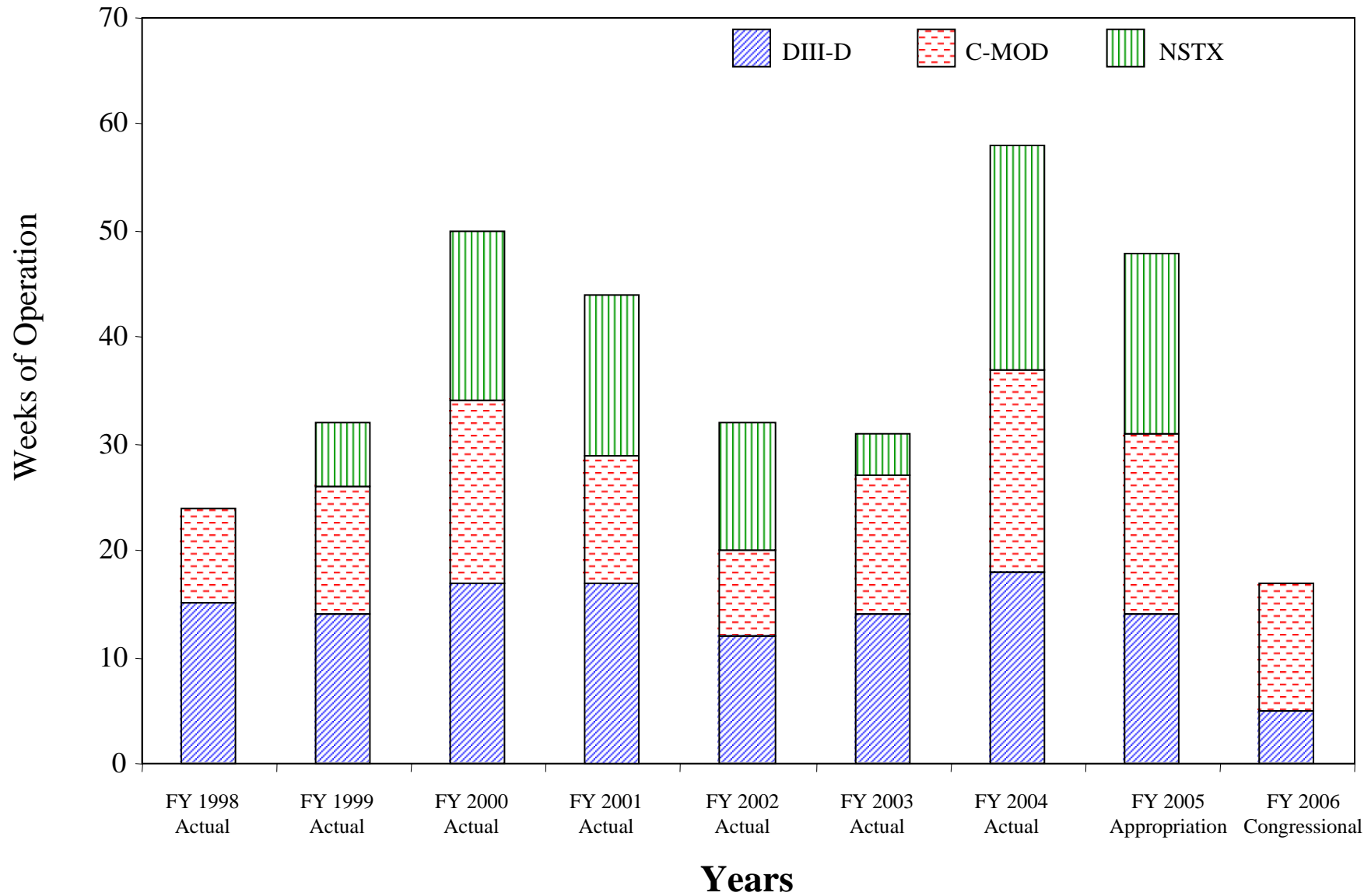
FY 2006 Fusion Energy Sciences Congressional Budget Request

	(\$ Millions)		
	FY 2004 <u>Actual</u>	FY 2005 <u>Appropriation</u>	FY 2006 <u>Congressional</u>
Science	142.7	155.1	142.8
Facility Operations	85.7	89.9	127.5
Enabling R&D	<u>27.5</u>	<u>28.9</u>	<u>20.3</u>
OFES Total	255.9	273.9	290.6
 DIII-D	 54.4	 55.7	 51.4
C-Mod	22.3	22.0	21.5
NSTX	35.6	34.5	30.7
NCSX	16.7	18.3	16.6
 ITER	 3.2	 4.9	 55.5
Non-ITER	252.7	269.0	234.9

FY 2006 Fusion Program Highlights

- o Begin U.S. ITER Fabrication Effort (\$55.5M, +\$50.6M)
 - \$46.0M for MIE Project (Total Estimated Cost funding)
 - \$3.5M for R&D support
 - \$6.0M for transitional activities that need to be completed before starting MIE
- o Increase plasma science/NSF partnership (+\$1.6M)
- o Close out fusion materials science research (-\$7.3M)
 - Rely on materials research in BES and foreign program
 - ITER will have to address its own materials needs
- o Cut back HEDP Research (-\$7.2M)
- o Reduce Major Facility operations and research (-\$8.7M)
 - No operation on NSTX, 5 weeks on DIII-D, 12 weeks on C-Mod
- o Eliminate one major concept in ICC program (-\$3.4M)
- o Reduce NCSX to FY 04 level (-\$1.6M)
 - Estimated 1 year delay and \$4.5M increase in cost
- o Reduce Plasma Technologies to focus on ITER specifics (-\$4.2M)
- o Other reductions in Theory, Advanced Design and SBIR (-\$2.1M)

Major Fusion Facilities Operating Times



FY2006 Final ITER Preparations and Start of the U.S. Contributions to ITER MIE Project – Total of \$55.5M

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>
ITER Preparations	\$3.2M	\$4.9M	\$6.0M *
ITER Major Item of Equipment Project			
Annual Total Estimated Cost (TEC) Funding	0	0	\$46.0M
ITER Major Item of Equipment Project			
Annual Other Project Cost (OPC) Funding	0	0	\$3.5M

- MIE Start {
- Preparations funding - completion of the ITER Transitional Arrangements (ITA), a framework used in anticipation of an International ITER Agreement. These ITA activities involve all six ITER Parties and provide analyses of various transitional issues including safety, licensing, project management, preparation of specifications and system integration and for the continuation of various technical activities of the U.S. scientists and engineers in laboratories, universities, and industry.
 - TEC funding - procurement, fabrication and delivery of medium- and high- technology components, assignment of U.S. personnel to the ITER Organization abroad, and a provision of cash for the U.S. share of common costs at the ITER site for installation and testing.
 - OPC funding - R&D and design in support of magnets, plasma facing components, tritium processing, fueling and pumping, heating and current drive, materials, and diagnostics.

* Discussions are proceeding on whether ITER Preparation costs should be accounted for within the ITER Other Project Costs (OPC) and therefore within the ITER Total Project Cost (TPC).

ITER Outyear Funding Profile

U.S. Contributions to ITER - Annual Profile (\$ in Millions – in as spent dollars)

<u>Fiscal Year</u>	Total Estimated Costs (TEC)	Other Project Costs (OPC)	Total Project Costs (TPC)
2006	46.0	3.5	49.5*
2007	130.0	16.0	146.0
2008	182.0	18.8	200.8
2009	191.0	16.5	207.5
2010	189.0	10.3	199.3
2011	151.0	9.3	160.3
2012	120.0	6.2	126.2
2013	<u>29.0</u>	<u>3.4</u>	<u>32.4</u>
Total	1,038.0	84.0	1,122.0

*Discussions are under way about whether ITER Preparations funding in FY 2006 of \$6M should be accounted for within the ITER Total Project Cost (TPC).

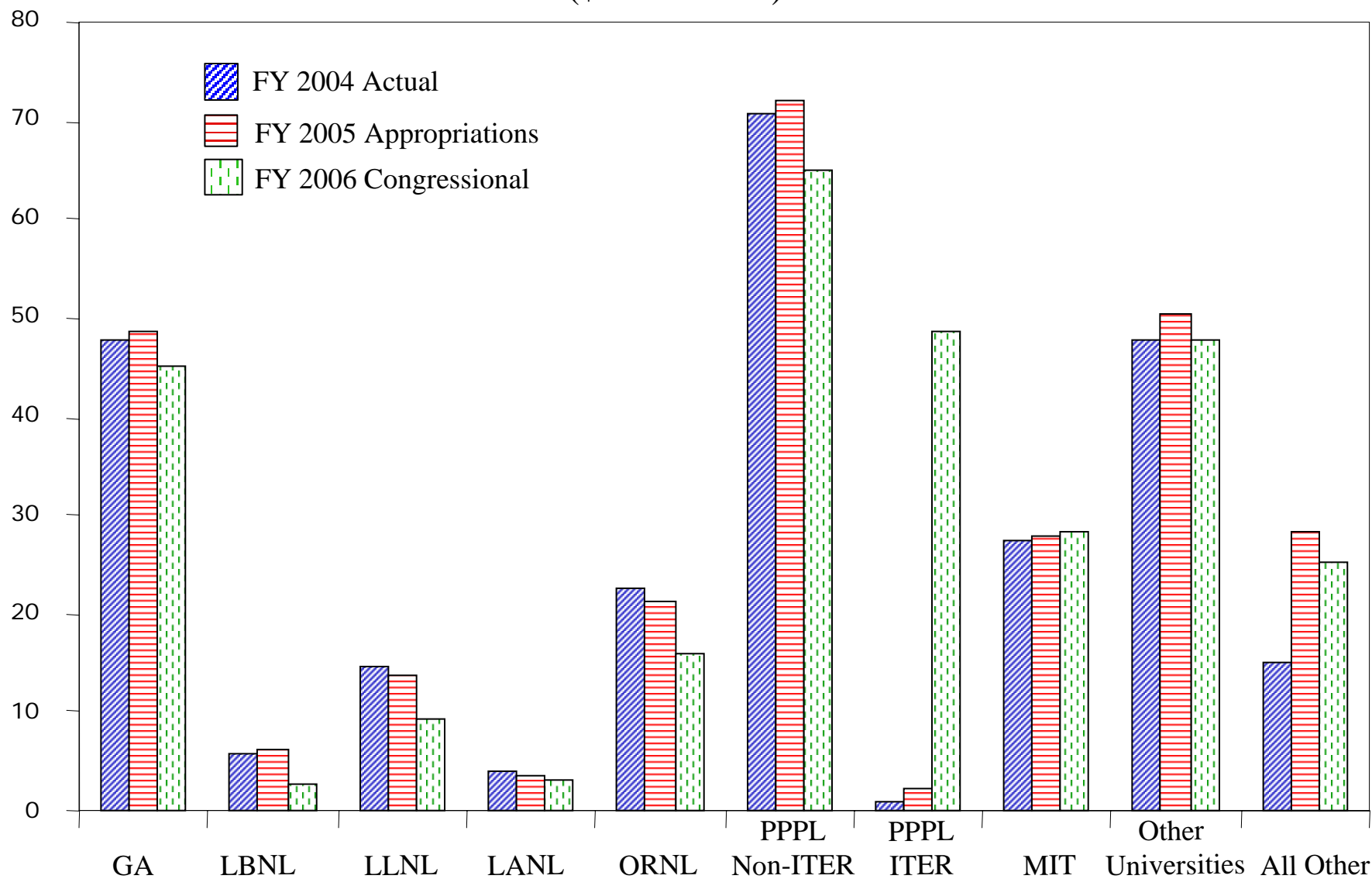
Fusion Energy Sciences Budget by Institution

(\$ in Millions)

<u>Institution</u>	FY 2004 <u>Actual</u>	FY 2005 <u>Appropriation</u>	FY 2006 <u>Congressional</u>
General Atomics	47.6	48.3	45.2
Lawrence Berkeley National Lab	5.8	6.1	2.6
Lawrence Livermore National Lab	14.4	13.5	9.2
Los Alamos National Lab	3.9	3.5	3.2
Oak Ridge National Laboratory	22.5	20.7	15.8
Princeton Plasma Physics Lab—Non ITER	70.5	71.8	64.8
Princeton Plasma Physics Lab—ITER	1.0	2.4	48.5
Massachusetts Institute of Technology	27.3	27.8	28.2
Other Universities	47.7	50.6	47.8
All Other	<u>15.2</u>	<u>29.2</u>	<u>25.3</u>
Total	255.9	273.9	290.6

Fusion Energy Sciences Funding by Institution

(\$ in Millions)



Summary of Fusion Energy Sciences FY 2006 Program

Science (\$142.8M, -\$12.3M)

- o Increase DOE/NSF Partnership in Basic Plasma Science and Engineering (+\$1.6M)
- o Reduce research at major facilities (-\$0.7M)
- o Terminate one major concept in ICC program (-\$3.0M)
- o Reduce Heavy Ion Beam research (-\$7.3M)
- o Reduce funding at MST (-\$0.4M)
- o Reduce funding for NCSX Research (-\$0.1M)
- o Reduce funding for Theory (-\$0.8M)
- o Reduce funding for Reserves, IPA, etc (-\$0.9M)
- o Fund SBIR/STTR at mandated level (-\$0.7M)
- o Fund remaining elements at the FY 2005 level

Facilities Operations (\$127.5M, +\$37.6M)

- o **Start ITER MIE Project (+\$46.0M)**
- o **Increase funding for ITER Transitional Arrangements (+\$1.1M)**
- o Reduce operations at DIII-D (to 5 weeks), C-Mod (to 12 weeks), NSTX (zero weeks) (-\$8.0M)
- o Reduce funding for NCSX MIE to FY 04 level causing 1 year delay, \$4.5M TEC increase (-\$1.6M)
- o Increase funding for GPE/GPP (+\$0.1M)

Enabling R&D (\$20.3M, \$-8.6M)

- o **Start R&D Support for ITER (+\$3.5M)**
- o Terminate Materials Science Research (-\$7.3M)
- o Reduce Plasma Technologies program (-\$4.2M)
- o Terminate Next Step Design activity (-\$0.6M)